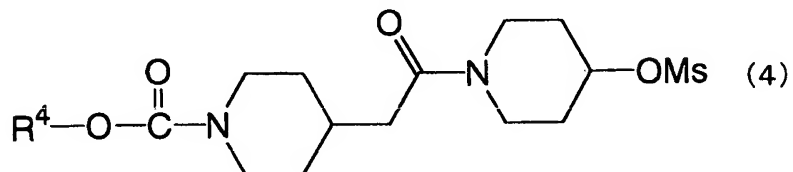WHAT IS CLAIMED IS:
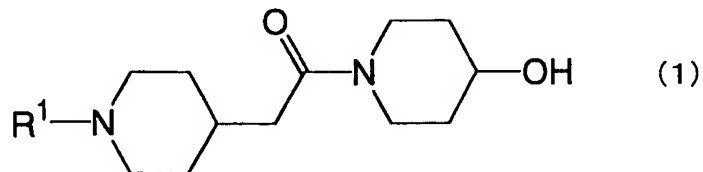
1. A method of producing an
N-alkoxycarbonylpiperidine derivative represented by
the following general formula (4):

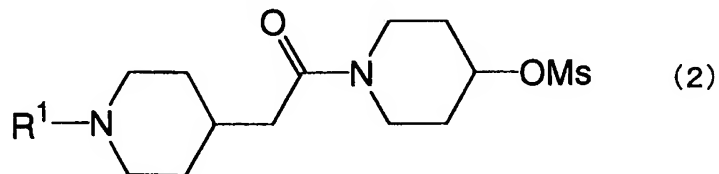$$R^4-O-\overset{\overset{\displaystyle O}{\|}}{C}-N \bigcirc \diagdown \overset{\overset{\displaystyle O}{\|}}{C}-N \bigcirc -OMs \quad (4)$$

5

wherein R^4 represents an alkyl group and Ms represents
a mesyl group, comprising:

reacting an N-aralkylpiperidine derivative
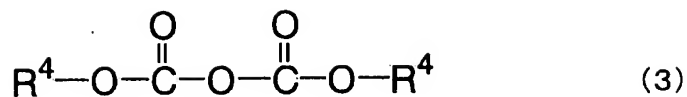represented by the following general formula (1):

$$R^1-N \bigcirc \diagdown \overset{\overset{\displaystyle O}{\|}}{C}-N \bigcirc -OH \quad (1)$$

10

wherein R^1 represents an aralkyl group which may have a
substituent, with a mesyl halide in the presence of a
base, thereby obtaining a mesylated product represented
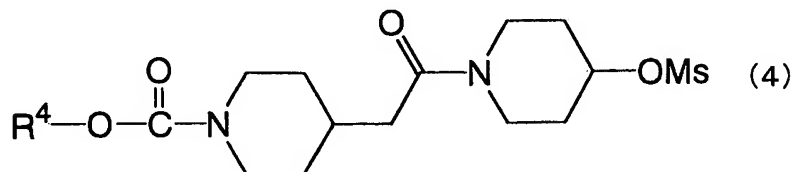by the following general formula (2):

$$R^1-N \bigcirc \diagdown \overset{\overset{\displaystyle O}{\|}}{C}-N \bigcirc -OMs \quad (2)$$

15

wherein R^1 represents an aralkyl group which may have a
substituent and Ms represents a mesyl group; and

reacting the mesylated product with a dicarbonate
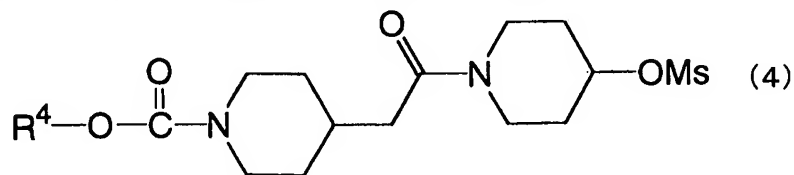represented by the following general formula (3):

$$R^4-O-\overset{\overset{\displaystyle O}{\|}}{C}-O-\overset{\overset{\displaystyle O}{\|}}{C}-O-R^4 \qquad (3)$$

wherein R^4 represents an alkyl group, in the presence of hydrogen and a catalyst containing palladium, thereby obtaining an N-alkoxycarbonylpiperidine

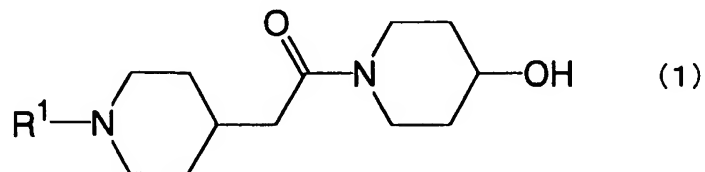5   derivative represented by the following general formula (4):

$$R^4-O-\overset{\overset{\displaystyle O}{\|}}{C}-N\underset{}{\overset{}{\bigcirc}}\text{—OMs} \qquad (4)$$

wherein R^4 represents an alkyl group and Ms represents a mesyl group.

10   2.   A method of producing an N-alkoxycarbonylpiperidine derivative represented by the following general formula (4):
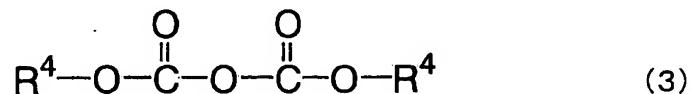
$$R^4-O-\overset{\overset{\displaystyle O}{\|}}{C}-N\underset{}{\overset{}{\bigcirc}}\text{—OMs} \qquad (4)$$

wherein R^4 represents an alkyl group and Ms represents

15   a mesyl group, comprising:

reacting an N-aralkylpiperidine derivative represented by the following general formula (1):
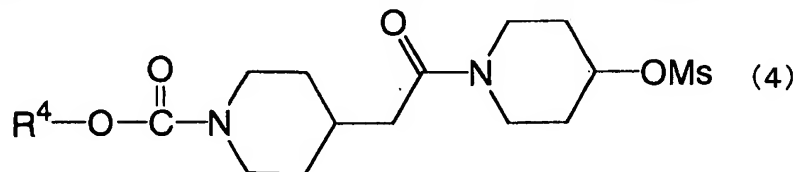
$$R^1-N\underset{}{\overset{}{\bigcirc}}\text{—OH} \qquad (1)$$

wherein R^1 represents an aralkyl group which may have a substituent, with a dicarbonate represented by the following general formula (3):

$$R^4\text{—O—}\overset{\overset{\displaystyle O}{\|}}{C}\text{—O—}\overset{\overset{\displaystyle O}{\|}}{C}\text{—O—}R^4 \qquad (3)$$

wherein R^4 represents an alkyl group, in the presence of hydrogen and a catalyst containing palladium, thereby obtaining an alkoxycarbonylated product represented by the following general formula (5):

$$R^4\text{—O—}\overset{\overset{\displaystyle O}{\|}}{C}\text{—N}\underset{\qquad}{\qquad}\text{—OH} \qquad (5)$$
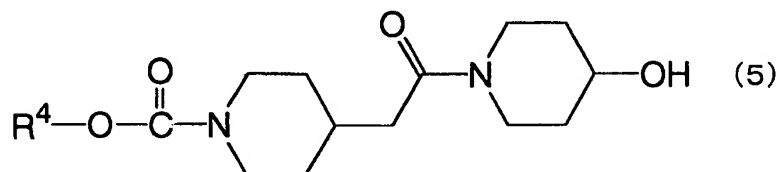
wherein R^4 represents an alkyl group; and

reacting the alkoxycarbonylated product with a mesyl halide in the presence of a base, thereby obtaining an N-alkoxycarbonylpiperidine derivative represented by the following general formula (4):

$$R^4\text{—O—}\overset{\overset{\displaystyle O}{\|}}{C}\text{—N}\underset{\qquad}{\qquad}\text{—OMs} \qquad (4)$$
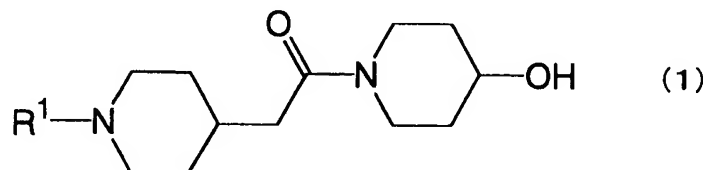
wherein R^4 represents an alkyl group and Ms represents a mesyl group.

3. An N-aralkylpiperidine derivative represented by the following general formula (1):

$$R^1-N \diagdown \overset{O}{\diagup} N \diagdown -OH \qquad (1)$$
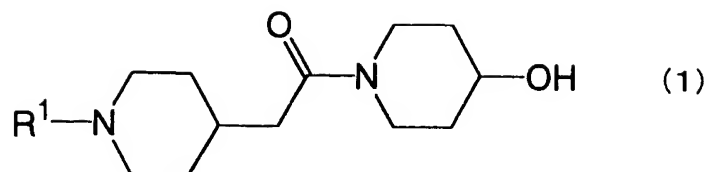
wherein R^1 represents an aralkyl group which may have a substituent.

4. A method of producing an N-aralkylpiperidine derivative represented by the following general formula (1):

$$R^1-N \diagdown \overset{O}{\diagup} N \diagdown -OH \qquad (1)$$

wherein R^1 represents an aralkyl group which may have a substituent, comprising:

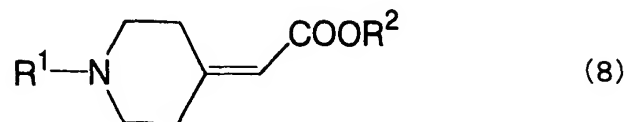reacting an N-aralkylpiperidone derivative represented by the following general formula (6):

$$R^1-N \diagdown =O \qquad (6)$$

wherein R^1 represents an aralkyl group which may have a substituent, with a phosphate reagent represented by the following general formula (7):
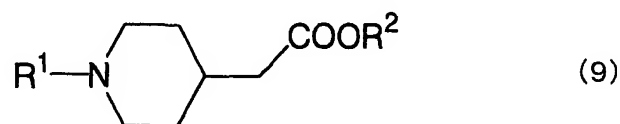
$$(R^3O)_2\overset{O}{\underset{\|}{P}}-\diagup^{COOR^2} \qquad (7)$$

wherein R^2 represents an alkyl group and R^3 represents an alkyl group or aryl group, in the presence of a base, thereby obtaining a piperidylideneacetic acid

derivative represented by the following general

formula (8):

$$R^1\text{—}N \diagdown \diagup\diagdown COOR^2 \tag{8}$$

wherein R^1 represents an aralkyl group which may have a

5   substituent and R^2 represents an alkyl group;

reducing the piperidylideneacetic acid derivative

to a piperidylacetic acid derivative represented by the

following general formula (9):

$$R^1\text{—}N \diagdown \diagup\diagdown COOR^2 \tag{9}$$

10   wherein R^1 represents an aralkyl group which may have a

substituent and R^2 represents an alkyl group; and

reacting the piperidylacetic acid derivative with

4-hydroxypiperidine in the presence of a base, thereby

obtaining an N-aralkylpiperidine derivative represented

15   by the following general formula (1):

$$R^1\text{—}N \diagdown \diagup\diagdown \overset{O}{\underset{}{C}}\text{—}N \diagdown\diagup\text{—OH} \tag{1}$$
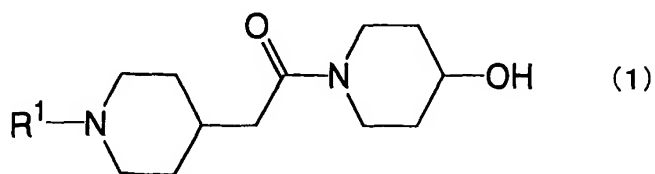
wherein R^1 represents an aralkyl group which may have a

substituent.

5.   The method according to claim 1, wherein R^1

20   represents a benzyl group which may have a substituent.

6.   The method according to claim 1, wherein R^1

represents a benzyl group.

7. The method according to claim 1, wherein R^4 represents a straight-chain or branched alkyl group having 1 to 6 carbon atoms.

8. The method according to claim 1, wherein R^4 represents a t-butyl group.

9. The method according to claim 1, wherein R^1 represents a benzyl group, and R^4 represents a t-butyl group.

10. The method according to claim 2, wherein R^1 represents a benzyl group which may have a substituent.

11. The method according to claim 2, wherein R^1 represents a benzyl group.

12. The method according to claim 2, wherein R^4 represents a straight-chain or branched alkyl group having 1 to 6 carbon atoms.

13. The method according to claim 2, wherein R^4 represents a t-butyl group.

14. The method according to claim 2, wherein R^1 represents a benzyl group, and R^4 represents a t-butyl group.

15. The N-aralkylpiperidine derivative according to claim 3, wherein R^1 represents a benzyl group which may have a substituent.

16. The N-aralkylpiperidine derivative according to claim 3, wherein R^1 represents a benzyl group.

17. The method according to claim 4, wherein R^1 represents a benzyl group which may have a substituent.

18. The method according to claim 4, wherein R^1 represents a benzyl group.

19. The method according to claim 4, wherein R^2 represents a methyl group or ethyl group, and R^3

5   represents a methyl group, ethyl group or phenyl group.

20. The method according to claim 4, wherein R^1 represents a benzyl group, R^2 represents a ethyl group, and R^3 represents a ethyl group.

21. A method of producing 1-(4-piperidylacetyl)-4-

10   hydroxypiperidine represented by the following

formula (10):

(10)

,
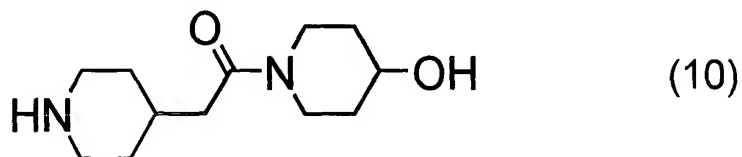
comprising:

de-aralkylating an N-aralkylpiperidine derivative

15   of the following general formula (1):

(1)
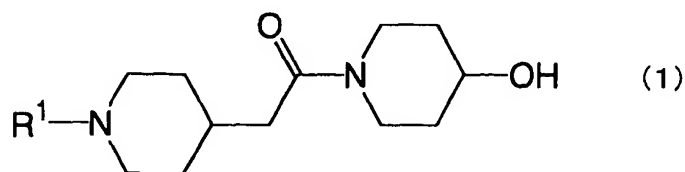
wherein R^1 represents an aralkyl group which may have a substituent.

22. 1-(4-piperidylacetyl)-4-hydroxypiperidine

20   represented by the following formula (10):

(10)